The vegetation in the riparian buffer affects the type and quantity of detritus that occurs in the stream. It is likely that vegetation that falls into the stream generally does not move very far away so that the food benefits are highly localized to the immediate stream corridor. Older stratified forests may provide the greatest variation in quality of detritus food for macroinvertebrates.

Vegetation also affects the amount of light that reaches the stream, but this is a function of stream order and stream width as well. For first-, second-, and third-order streams, the riparian canopy of trees can block sunlight from reaching the water. A shaded stream is likely to have more diatoms and less filamentous algae. A stream that runs through a cleared riparian buffer or one that has meadow vegetation is likely to have more filamentous algae. The detritus food source from the clearing of a riparian buffer is only temporary as detritus rapidly decays. For grassed riparian buffers, filamentous algae is likely to dominate. Also, large streams and rivers will receive a large portion of direct sunlight, which encourages filamentous algal production in open areas. Nearshore areas bordered by mature vegetation are likely to have diatoms and sufficient detritus.

Temperature and light. Vegetation type, canopy development, and directional orientation of the stream control light energy and impact stream temperature. A north-south oriented stream is less affected by buffer canopy shading. The vegetation on the north side of an east-west oriented stream may also have little effect on light penetration. For first-, second-, and third-order streams, the majority of water flows through a shaded riparian buffer. For higher order streams, which are wide and open in cross-section, shading has less of an impact on water temperature. However, the loss of the buffer canopy on any stream, due to clearing, can increase water temperature substantially, causing a shift in macroinvertebrate and fish species.

Physical habitat (pools, riffles, etc.). Roots of riparian vegetation stabilize the stream bank and prevent stream bank erosion and sedimentation. Stabilized stream banks also help maintain the geometry of the stream, including characteristics such as the meander length and profile. Preventing excess sedimentation helps keep silt from covering large rocks and stones, which serve as habitat for some macroinvertebrates, in the stream bed. Pools can be vital parts of stream habitat for fish. Excess sediment can fill pools and eliminate habitat. Tree roots and woody debris are also important habitat features for macroinvertebrates and fish. Overhanging stream banks, stabilized by tree roots and large woody debris, can be important habitat for fish.

Large woody debris provides critical macroinvertebrate habitat. Large woody debris can also create dams and trap sediment and detritus. Riparian forests may have the greatest enhancing effect on fish habitat on mid-order streams (i.e., stream order 3 to 6) when these streams have sufficient large woody debris structure and flow to support diverse fish and macroinvertebrate populations.

Habitat: Wildlife

Wildlife species require food, water, and cover. Well-managed riparian buffers generally support larger populations of wildlife because the buffer provides many habitat requirements. In a stratified forest, different habitat zones exist vertically, including the soil-air interface, herbs and shrubs, intermediate-height trees, and the canopy. Included with the leaf litter and rotting logs at the soil-water interface are insects, isopods, spiders, and mites. These organisms are a food source for reptiles, mice, and birds. The herbs and shrubs provide habitat for insects, birds, and mammals. The intermediate zone and the canopy serve as habitat for birds, bats, squirrels, opossums,